

AMENDMENTS TO THE CLAIMS

1. (Currently amended) A method for producing multilayered ceramic substrate having a cavity comprising the steps of:

providing a first ceramic green sheet having an opening for forming a cavity, and a second ceramic green sheet having no opening at a position corresponding to said opening of the first ceramic green sheet;

providing a first shrinkage-reducing material for reducing shrinkage stress produced at a boundary between said first ceramic green sheet and said second ceramic green sheet;

forming a green-sheet stack having a cavity defined by said opening by stacking said first ceramic green sheet, said second ceramic green sheet and said first shrinkage-reducing material so that an aperture of said cavity is disposed on at least one end face of said stacked ceramic green sheets in a sheet-stacking direction and extends through a depth of said stack to an inner peripheral surface while positioning said shrinkage-reducing layer comprising said first shrinkage-reducing material along said boundary between said first ceramic green sheet and said second ceramic green sheet but less than the entire surface of the second green sheet at the position corresponding to said opening of the first ceramic green sheet so that said shrinkage-reducing layer is exposed at an end of said inner peripheral surface of said cavity; and

firing said green-sheet stack.

2. (Original) The method for producing multilayered ceramic substrate having a cavity according to Claim 1, wherein said shrinkage-reducing layer is exposed on the entire periphery of the inner peripheral surface of said cavity as a shrinkage-reducing pad.

3. (Original) The method for producing multilayered ceramic substrate having a cavity according to Claim 2, wherein said shrinkage-reducing pad has a surface substantially parallel to a surface of said first ceramic green sheet defining said one end face and wherein said shrinkage-reducing pad surface has an area which is more than or equal to about 10% of the area of said surface of said first ceramic green sheet to which it is substantially parallel.

4. (Original) The method for producing multilayered ceramic substrate having a cavity according to Claim 2, wherein said shrinkage-reducing pad comprises a thick film layer having a planar surface substantially identical to that of said first ceramic green sheet along said boundary between said first ceramic green sheet and said second ceramic green sheet.

5. (Original) The method for producing multilayered ceramic substrate having a cavity according to Claim 2, wherein said shrinkage-reducing pad has a thickness which is less than or equal to about 20% of the depth of said cavity.

6. (Currently amended) The method for producing multilayered ceramic substrate having a cavity according to Claim 2, A method for producing multilayered ceramic substrate having a cavity comprising the steps of:

providing a first ceramic green sheet having an opening for forming a cavity, and a second ceramic green sheet having no opening at a position corresponding to said opening of the first ceramic green sheet;

providing a first shrinkage-reducing material for reducing shrinkage stress produced at a boundary between said first ceramic green sheet and said second ceramic green sheet;

forming a green-sheet stack having a cavity defined by said opening by stacking said first ceramic green sheet, said second ceramic green sheet and said first shrinkage-reducing material so that an aperture of said cavity is disposed on at least one end face of said stacked ceramic green sheets in a sheet-stacking direction and extends through a depth of said stack to an inner peripheral surface while positioning said shrinkage-reducing layer comprising said first shrinkage-reducing material along said boundary between said first ceramic green sheet and said second ceramic green sheet so that said shrinkage-reducing layer is exposed at the entire periphery of said inner peripheral surface of said cavity; and

firing said green-sheet stack,

wherein said shrinkage-reducing pad comprises a glass component, and the softening temperature of said glass component is less than or equal to the shrinkage starting temperature of said first and second ceramic green sheets.

7. (Original) The method for producing multilayered ceramic substrate having a cavity according to Claim 6, wherein said first and second ceramic green sheets comprise a glass component.

8. (Original) The method for producing multilayered ceramic substrate having a cavity according to Claim 7, wherein the content of said glass component in said first and second ceramic green sheets is less than the content of said glass component in said shrinkage-reducing pad.

9. (Original) The method for producing multilayered ceramic substrate having a cavity according to Claim 8, wherein said glass components contained in said shrinkage-reducing pad and said first and second ceramic green sheets have a common constituent.

10. (Original) The method for producing multilayered ceramic substrate having a cavity according to Claim 9, wherein a glass component contained in said shrinkage-reducing pad is the same as a glass component contained in said first and second ceramic green sheets.

11. (Original) The method for producing multilayered ceramic substrate having a cavity according to Claim 1, further comprising:

providing a second shrinkage-inhibiting material comprising an inorganic material having a firing temperature higher than that of a ceramic material contained in said first and second ceramic green sheet,

during said forming said green-sheet stack, forming a two additional shrinkage-inhibiting layers each of which comprise said second shrinkage-inhibiting material so as to cover both end faces of said green-sheet stack in the sheet-stacking direction while said opening is formed so as to expose said aperture of said cavity therefrom, and

firing said green-sheet stack under conditions that said inorganic material contained in said additional shrinkage-inhibiting layers is not fired.

12. (Original) The method for producing multilayered ceramic substrate having a cavity according to Claim 11, further comprising removing said additional shrinkage-inhibiting layers after said firing.

13 -20. (Withdrawn)